

Cell Processes and Energy

Respiration (pages 49–53)**What Is Respiration?** (pages 50–52)

Key Concept: During respiration, cells break down simple food molecules such as sugar and release the energy they contain.

- **Respiration** is how cells get energy from sugar.
- Respiration takes place in both plant cells and animal cells. Respiration happens all the time because cells always need energy. Respiration has two stages.
- The first stage of respiration takes place in the cytoplasm of the cell. There, sugar from food is broken down into smaller particles. Just a little energy is released.
- The second stage of respiration takes place in the mitochondria. There, the small sugar particles from the cytoplasm are broken down into even smaller particles. These chemical reactions must have oxygen to take place. Oxygen comes from the air you breath.
- A lot of energy is released during the second stage of respiration. Carbon dioxide and water are also made. They are given off as wastes.
- Photosynthesis and respiration are the opposite of each other. Photosynthesis uses carbon dioxide, water, and energy and makes oxygen and sugar. Respiration uses sugar and oxygen and gives off carbon dioxide, water, and energy.
- Together, photosynthesis and respiration form a cycle that keeps the levels of oxygen and carbon dioxide about the same in Earth's atmosphere.